IN THE CLAIMS

The following listing of the claims is provided in accordance with 37 C.F.R. §1.121.

1. (previously presented) A system for detecting an explosive within an article, comprising:

an acquisition subsystem including an x-ray computed tomography scanner having a stationary radiation source and a stationary detector, said acquisition subsystem is adapted to acquire intensity measurements pertaining to the explosive;

a means for conveying articles to be scanned through the computed tomography scanner; and

a reconstruction subsystem, in communication with the acquisition subsystem, for generating view data from the intensity measurements and for reconstructing the view data into image data representative of the explosive, wherein said reconstruction subsystem utilizes three - dimensional reconstruction techniques;

wherein the acquisition subsystem acquires image data of the articles for three dimensional reconstruction without rotating the articles.

2. (canceled).

3. (previously presented) The system of claim 1, wherein the computed tomography scanner comprises:

a vacuum housing chamber for generating an electron beam;

a target for receiving the electron beam and emitting x-rays in response to the electron beam; and

a detector array located opposite the target for receiving the emitted x-rays.

4. (previously presented) The system of claim 1, wherein the computed tomography scanner comprises:

a source ring including a plurality of stationary x-ray sources; and

a detector ring adjacent to the source ring and including a plurality of discrete detector modules.

5. (original) The system of claim 1, wherein the reconstruction subsystem comprises a plurality of reconstruction stages.

6. (original) The system of claim 5, wherein the plurality of reconstruction stages comprises one reconstruction stage including an algorithm adapted to reduce artifacts in the image data.

7. (original) The system of claim 5, wherein the plurality of reconstruction stages comprises one reconstruction stage including an algorithm adapted to vary the voxel size in the image data.

8. (original) The system of claim 5, wherein the plurality of reconstruction stages comprises one reconstruction stage including an algorithm adapted to compensate for noise in the acquired information.

9. (original) The system of claim 5, wherein the plurality of reconstruction stages comprises one reconstruction stage including an algorithm adapted to iteratively and statistically reconstruct the image data.

10. (original) The system of claim 5, further comprising a computer-aided detection subsystem for analyzing the image data.

11. (original) The system of claim 10, wherein the computer-aided detection subsystem comprises a plurality of computer-aided detection stages.

12. (original) The system of claim 11, wherein at least one of the plurality of computer-aided detection stages is in communication with any of the plurality of reconstruction stages.

13. (original) The system of claim 12, wherein at least one computer-aided detection stage is adapted to receive the image data from one of the reconstruction stages, analyze the image data, and identify an area of interest within the image data.

14. (original) The system of claim 13, wherein the computer-aided detection subsystem is adapted to feedback image data of the area of interest to the reconstruction subsystem.

15. (original) The system of claim 1, wherein the acquisition subsystem comprises an energy discriminating detector adapted to acquire energy sensitive measurements.

16. (original) The system of claim 15, wherein the energy discriminating detector includes an assembly of two or more x-ray attenuating materials the signals from which can be processed in either a photon counting or a charge integration mode.

17. (original) The system of claim 1, wherein the acquisition subsystem comprises at least one detector for detecting x-rays from at least two different incident x-ray energy spectra.

18. (original) The system of claim 1, further comprising an alternative modality subsystem.

19. (original) The system of claim 18, wherein the alternative modality subsystem comprises one or more of the group consisting of a coherent scattering subsystem, a quadrupole subsystem, and a trace detection subsystem.

20. (original) The system of claim 1, further comprising a conveyor belt for transporting the article to the acquisition subsystem.

21. (previously presented) A system for detecting an explosive within an article, comprising:

a transportation means for transporting the article without rotating the article;

an acquisition subsystem comprising an x-ray computed tomography scanning device having a stationary radiation source and a stationary detector and being adapted to acquire intensity measurements from which view data may be derived;

a means for conveying articles to be scanned through the computed tomography scanner;

a reconstruction subsystem, comprising a plurality of reconstruction stages, for reconstructing the view data into image data representative of the explosive, wherein said reconstruction subsystem utilizes three-dimensional reconstruction techniques; and

a computer-aided detection subsystem, comprising a plurality of computer-aided detection stages, for analyzing the image data.

22. (canceled).

23. (previously presented) The system of claim 21, wherein the computed tomography scanning device comprises:

a vacuum housing chamber for generating an electron beam;

a target for receiving the electron beam and emitting x-rays in response to the electron beam; and

a detector array located opposite the target for receiving the emitted x-rays.

24. (previously presented) The system of claim 21, wherein the computed tomography scanning device comprises:

a source ring including a plurality of stationary x-ray sources; and

a detector ring adjacent to the source ring and including a plurality of discrete detector modules.

25. (original) The system of claim 21, wherein the acquisition subsystem is adapted to communicate the view data to the reconstruction subsystem.

26. (original) The system of claim 25, wherein the reconstruction subsystem is adapted to reconstruct the view data into the image data and communicate the image data to the computer-aided detection subsystem.

27. (previously presented) The system of claim 26, wherein the computer-aided detection subsystem is adapted to identify an area of interest within the image data and direct the reconstruction subsystem to reconstruct the image data for the area of interest.

28. (original) The system of claim 21, wherein the acquisition subsystem is adapted to communicate the view data to the computer-aided detection subsystem.

29. (original) The system of claim 28, wherein the computer-aided detection subsystem is adapted to identify an area of interest within the view data and direct the reconstruction subsystem to reconstruct the view data into image data for the area of interest.

30. (original) The system of claim 21, wherein the plurality of reconstruction stages comprises one reconstruction stage including an algorithm adapted to reduce artifacts in the acquired information.

31. (original) The system of claim 21, wherein the plurality of reconstruction stages comprises one reconstruction stage including an algorithm adapted to vary the voxel size in the image data.

32. (original) The system of claim 21, wherein the plurality of reconstruction stages comprises one reconstruction stage including an algorithm adapted to compensate for noise in the acquired information.

33. (original) The system of claim 21, wherein the plurality of reconstruction stages comprises one reconstruction stage including an algorithm adapted to iteratively and statistically reconstruct the acquired information into the image data.

34. (original) The system of claim 21, wherein at least one of the plurality of computer-aided detection stages is in communication with any of the plurality of reconstruction stages.

35. (original) The system of claim 21, wherein the acquisition subsystem comprises an energy discriminating detector adapted to acquire energy sensitive measurements.

36. (original) The system of claim 35, wherein the energy discriminating detector includes an assembly of two or more x-ray attenuating materials the signals from which can be processed in either a photon counting or a charge integration mode.

37. (original) The system of claim 21, wherein the acquisition subsystem comprises at least one detector for detecting x-rays from at least two different incident x-ray energy spectra.

38. (original) The system of claim 21, further comprising an alternative modality subsystem.

39. (original) The system of claim 38, wherein the alternative modality subsystem comprises one or more from the group consisting of a coherent scattering subsystem a quadrupole subsystem, and a trace detection subsystem.

40. (original) The system of claim 21, wherein the transportation means comprises a conveyor belt.

41. (previously presented) A system for detecting an explosive within an article, comprising:

an acquisition subsystem including an x-ray computed tomography scanner for acquiring intensity measurements pertaining to the explosive;

a means for conveying articles to be scanned through the computed tomography scanner;

a reconstruction subsystem, in communication with the acquisition subsystem, for generating view data from the intensity measurements and for reconstructing the view data into image data, wherein said reconstruction subsystem utilizes three-dimensional reconstruction techniques;

a computer-aided detection subsystem for analyzing the image data; and

at least one additional source of information pertaining to the explosive, wherein the image data and the at least one additional source of information assist in identifying the explosive,

wherein the acquisition subsystem acquires image data of the article for three dimensional construction without rotating the articles.

42. (original) The system of claim 41, wherein the at least one additional source of information comprises an energy discriminating detector for discriminating between high and low energy signatures.

43. (original) The system of claim 42, wherein the energy discriminating detector comprises a high-energy sensitive detector and a low energy sensitive detector.

44. (original) The system of claim 42, wherein the energy discriminating detector comprises at least one detector for detecting x-rays from at least two different incident x-ray energy spectra.

45. (original) The system of claim 41, wherein the at least one additional source of information comprises an alternative modality subsystem.

46. (original) The system of claim 45, wherein the alternative modality subsystem comprises one or more from the group consisting of a coherent scattering subsystem, a quadrupole subsystem, and a chemical trace detection subsystem.

47. (original) The system of claim 41, wherein the at least one additional source of information comprises a risk variable subsystem.

48. (previously presented) A method for detecting an explosive within an article, comprising:

acquiring information pertaining to the explosive with an acquisition apparatus having an x-ray computed tomography scanner with a stationary radiation source and a stationary detector;

a means for conveying articles to be scanned through the computed tomography scanner; and

reconstructing an image representative of the explosive based upon the acquired information, wherein said reconstructing includes reconstructing the acquired information into a three-dimensional image;

wherein the acquisition subsystem acquires image data of the articles for three-dimensional reconstruction without rotating the articles.

49. (previously presented) The method of claim 48, wherein the acquiring of information step is accomplished with the computed tomography scanner comprising:

a vacuum housing chamber for generating an electron beam;

a target for receiving the electron beam and emitting x-rays in response to the electron beam; and

a detector array located opposite the target for receiving the emitted x-rays.

50. (previously presented) The method of claim 48, wherein the acquiring of information step is accomplished with the computed tomography scanner comprising:

a source ring including a plurality of stationary x-ray sources; and

a detector ring adjacent to the source ring and including a plurality of discrete detector modules.

51. (original) The method of claim 48, further comprising transporting the article to a location for the acquiring information step.

52. (original) The method of claim 48, wherein the reconstructing an image step comprises subjecting the acquired information to at least one reconstruction technique to form image data representative of the explosive.

53. (original) The method of claim 52, wherein the reconstructing an image step comprises subjecting the acquired information to at least one technique in the group consisting of an algorithm adapted to reduce artifacts in the acquired information,

an algorithm adapted to vary the voxel size in the image data, an algorithm adapted to compensate for noise in the acquired information, and an algorithm adapted to iteratively and statistically reconstruct the acquired information into the image.

54. (original) The method of claim 48, further comprising analyzing the reconstructed image to identify the explosive.

55. (original) The method of claim 54, further comprising recomputing area of interest image data.

56. (original) The method of claim 48, further comprising obtaining additional information through an alternative modality subsystem.

57. (original) The method of claim 56, wherein the alternative modality subsystem comprises one or more from the group consisting of a coherent scattering subsystem, a quadrupole subsystem, and a chemical trace detection subsystem.

58. (previously presented) A method for detecting an explosive within an article, comprising:

acquiring information pertaining to an object located within the article with an x-ray computed tomography machine having a stationary radiation source and a stationary detector;

a means for conveying articles to be scanned through the computed tomography scanner;

communicating the acquired information to a plurality of reconstruction modules;

reconstructing the acquired information into image data with the plurality of reconstruction modules, wherein said reconstructing includes reconstructing the acquired information into a three-dimensional image; and

analyzing the image data to identify whether the object is an explosive device;

wherein the acquisition subsystem acquires image data of the articles for three-dimensional reconstruction without rotating the articles.

59. (previously presented) The method of claim 58, wherein the acquiring information step comprises acquiring information with the computed tomography machine comprising:

a vacuum housing chamber for generating an electron beam;

a target for receiving the electron beam and emitting x-rays in response to the electron beam; and

a detector array located opposite the target for receiving the emitted x-rays.

60. (previously presented) The method of claim 58, wherein the acquiring information step is accomplished with the computed tomography machine comprising:

a source ring including a plurality of stationary x-ray sources; and

a detector ring adjacent to the source ring and including a plurality of discrete detector modules.

61. (original) The method of claim 58, wherein the reconstructing the acquired information step comprises reducing artifacts in the image data.

62. (original) The method of claim 58, wherein the reconstructing the acquired information step comprises varying the voxel size in the image data.

63. (original) The method of claim 58, wherein the reconstructing the acquired information comprises compensating for noise in the image data.

64. (original) The method of claim 58, wherein the reconstructing the acquired information comprises iteratively and statistically reconstructing the acquired information into the image.

65. (original) The method of claim 58, further comprising obtaining additional information through an alternative modality subsystem.

66. (original) The method of claim 65, wherein the alternative modality subsystem comprises one or more from the group consisting of a coherent scattering subsystem, a quadrupole subsystem, and a chemical trace detection subsystem.

67. (original) The method of claim 58, further comprising transporting the article to the scanning device with a conveyor belt.

68. (previously presented) A method for detecting an object, comprising:

scanning an article with an x-ray computed tomography machine to acquire information pertaining to the object, wherein the computed tomography machine includes a stationary radiation source and a stationary detector;

a means for conveying articles to be scanned through the computed tomography scanner;

discriminating between high-energy and low-energy signatures;

reconstructing image data representative of the object based upon the high-energy and low-energy signatures, wherein said reconstructing includes reconstructing the information derived from the high-energy and low-energy signatures into a three-dimensional image; and

analyzing the reconstructed image to identify the object;

wherein the acquisition subsystem acquires image data of the articles for three-reconstruction without rotating the article.

69. (original) The method of claim 68, wherein the discriminating step comprises distinguishing between absorption coefficients originating from photoelectric and Compton scatter processes.

70. (original) The method of claim 69, wherein the discriminating step is accomplished with an energy discriminating detector comprising an energy sensitive detector.

71. (original) The method of claim 70, wherein the discriminating step is accomplished with an energy discriminating detector comprising at least one detector adapted to perform measurements by at least two distinctive incident x-ray energy spectra.

72. (original) The method of claim 70, wherein the article is a human body and the object is within the human body.